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FCC RF Exposure Information Per KDB Inquiry Tracking Number 360152

Operational Description

The Gryphex Locator (OMU) is an ankle-worn offender tracking device. The Unit utilizes GPS technology to ascertain the offender's current location. This information can be gathered at variable rates with the maximum location data rate of 1 locate per minute and the maximum transmission frequency of 1 per minute. However the time that it takes to transmit a single packet of location data is constant regardless of the transmission frequency. A typical rate plan locates an offender once each minute and transmits location data once every 10 minutes. The **maximum** transmission rate is once per minute.

RF Exposure Conditions

The Gryphex locator ankle-worn tracking device is intended for operation in the general population / uncontrolled RF exposure environment. Two radios are incorporated into this device which can transmit simultaneously (a GPRS Class 10 transmitter and an FHSS transmitter for communication back to the base station).

Antenna Separation Distances

~11.455mm to Ankle (both antennas)
~44mm FHSS Antenna to GSM Antenna

Transmission Mode

The Locator utilizes an internal GPRS Class 10 transmitter (2/8) as well as an FHSS transmitter for communication back to the base station.

Duty Cycle

The device features variable location and transmission rates with a **maximum** location rate of once per minute and a **maximum** transmission rate of once per minute. The on air transmission time from 1 location is 3 seconds. This leads to an on air duty cycle of 5%.

> Derived by measuring multiple message arrival times of the message reception time of the server. This was verified by measuring the total transmission time at different rate plans and observing the same total time to transmit time ratio. For example using the **maximum** location rate (once per minute) and the **maximum** transmission rate (once per minute) it takes 3 seconds to complete the 1 point transmission.
>
> Duty Cycle = Transmission Time / TOTAL Time = 3s/60s = 0.05
>
> Duty Cycle = 5%

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RF Output Power Comparison

GPRS Mode – Cellular 850 Band

Maximum Measured Conducted Output Power = 2340mW
Source Based Time Averaged Duty Cycle – 2/8 uplink slots = 25%
Source Based Time Averaged Duty Cycle – 5%
Source Based Time Averaged Output Power = 2340mW x 0.25 x .05 = 29.25mW

60/*f*(GHz) mW = 70.7 mW
The source based time-averaged output power is much less than 60/f

GPRS Mode – PCS 1900 Band

Maximum Measured Conducted Output Power = 640mW
Source Based Time Averaged Duty Cycle – 2/8 uplink slots = 25%
Source Based Time Averaged Duty Cycle – 5%
Source Based Time Averaged Output Power = 640mW x 0.25 x .05 = 8mW

60/*f*(GHz) mW = 31.4 mW
The source based time-averaged output power is much less than 60/f

FHSS Radio - 903MHz ISM Band

Maximum Measured Conducted Output Power = 3.55mW
Transmission On Time (Including Becon and Data Pulses) = 5.3mS
Transmissions Total Time = 14.7ms
Duty Cycle = (5.3mS / 14.7mS) x 100 = 36.05%
Source Based Time Averaged Output Power = 3.55mW x 0.365 = 1.3mW

60/*f*(GHz) mW = 66.44mW
The source based time-averaged output power is much less than 60/f

Simultaneous Transmission Consideration

Either the GSM850 or the GSM1900 radio may transmit simultaneously with the FHSS radio. It is not possible for both the GSM850 and GSM1900 radios to transmit at the same time. Considering the worst case simultaneous transmission above with the GSM 850 and the FHSS radios transmitting the combined source based time averaged output power is still much less than 60/*f*(GHz) mW.